



**Using interactive modeling tools to engage with, inform and empower decision making in local communities of landscape managers**

**- Experiences from participatory scenario development in Denmark using landscape scale nitrogen emission models**

Christensen, Andreas Aagaard

*Publication date:*  
2017

*Document version*  
Publisher's PDF, also known as Version of record

*Citation for published version (APA):*

Christensen, A. A. (2017). *Using interactive modeling tools to engage with, inform and empower decision making in local communities of landscape managers: - Experiences from participatory scenario development in Denmark using landscape scale nitrogen emission models*. Paper presented at IALE 2017 European Congress, Gent, Belgium.



# Using interactive modelling tools to engage with, inform and empower decision making in local communities of landscape managers – Experiences from participatory scenario development in Denmark using landscape scale nitrogen emission models

## Authors and Affiliations:

Andreas Aagaard Christensen (1)

(1) Department of Geosciences and Natural Resource Management, University of Copenhagen, Frederiksberg C (Denmark)

## Corresponding author:

Andreas Aagaard Christensen

## Email:

[anaach@ign.ku.dk](mailto:anaach@ign.ku.dk) (<mailto:anaach@ign.ku.dk>)

## Abstract:

During the last decade digital modelling tools for environmental impact assessment have become increasingly interactive, agile and user-oriented. This has made it possible to implement models in situ, using them in live scenario situations with local stakeholders. As a result modelling tools are now to an increasing extent used outside academic offices by consultants and officials engaged in direct dialogue or debate with local stakeholders. Models are entering the decision making space of local communities, challenging and informing local experience and expertise regarding the short- and long term environmental impact of landscape management. This opens up a number of questions regarding the status and consequence of scientific data and modelled impact estimates as compared to locally held knowledge and expertise. It also opens up questions regarding how the

injection of modelling capabilities into local communities affects decision making processes, and whether such changes variously work to empower or repress sustainable decision making practices. The present paper deals with these questions on the basis of experiences gathered in Denmark during the testing of a prototype tool for modelling the effect of agricultural land use decisions on nitrogen emission to the environment at landscape scales. Recently Danish authorities proposed to shift the scale of regulation from national regulatory instruments to a more local level to better fit relevant socio-political and agro-environmental processes, including the scale of farmers' decision making, the scale of relevant hydrological systems and the scale of key agro-ecological conditions such as soil characteristics and drainage. A prototype GIS-tool was designed to integrate locally held knowledge with national scale datasets in live scenario situations. Based on input data which is corrected and amended interactively by workshop participants, the tool estimates the effect of potential land use scenarios on nutrient emissions. The tool was tested in 5 scenario workshops in case areas in Denmark in 2016. On the basis of observations from the workshops, it is discussed how scientific and locally held knowledge interact in participatory scenario situations and how the decision making of local land users is affected by the advent of and authority of interactive landscape scale modelling tools.

#### **References:**

No references in abstract

#### **Symposium:**

[Digital transdisciplinarity in the landscape sciences – Integrating multiple types of digital data in studies of landscape change \(/symposium/digital-transdisciplinarity-landscape-sciences-%E2%80%93-integrating-multiple-types-digital-data\)](#)

#### **Oral or poster:**

Oral presentation

#### **Abstract order:**

9

---